

Quest for Archai: A Contribution to Systematic Psychology

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ABSTRACT

This paper deals with the unity of science. Science may be characterized as the human attempt to provide the simplest logico-mathematical organization of the statements of experience about which there is mutual agreement. Any science must deal with denotative (point-out-able) as well as designative (non-point-out-able) signs. "While every sign has a designatum, not every sign has a denotatum" (2). Designative signs are defined in terms of the relations between designata in a theoretical structure. Physics and chemistry are, in this defining sense, highly organized sciences; biology is less organized; and psychology, sociology, anthropology, and history are least organized. For a discussion of signs in science see (2).

Psychological theory at present seems to be concerned with (A) hypothetical constructs and intervening variables, and (B) operationism. Hypothetical constructs and intervening variables do not tell us how to conceptualize the stimulus and response behavior in which they are to be anchored. In certain recent texts in social psychology and personality, undefined concepts are introduced under the magic rubrics "intervening variable" and "hypothetical construct." Operationism, on the other hand, fails to tell us what measuring rod to choose. Furthermore, operationism provides no way of identifying the equivalence of that which is measured when the measurements are made by different means, i.e., the surveyor's geometrical length and a straight-edge measure of length.

The necessity for a broad theoretical structure in psychology is evident in the lack of adequate designata systems. But such broad theoretical structures are built around abstract generalized principles such as "quanta" or "relativity." These general principles, or Archai, will be referred to as first principles. Are there any for science in general and for psychology in particular? One principle which may accomplish these ends is presented by von Bertalanffy (1).

Previous to Von Bertalanffy's work, Zipf (4), showed that language behavior over long periods of time approximates a hyperbolic curve which can be described mathematically by an harmonic series. Zipf furthermore made a case for interpreting the curve to mean that language behavior, over time, acts as if human beings have attempted to obtain maximum specific meaning with a minimum of words. This is one aspect of least effort. Other aspects deal with the size of words, ecological populations, international disorders, etc. We may summarize by stating that certain social behaviors seem to be lawfully described in this manner.

Freeman (3) has attempted a description of all aspects of psychology in terms of physiological energy. He began with a borrowed and broadened notion of homeostasis or dynamic bodily equilibria. It is possible that a unity may be imposed on Freeman's and Zipf's work by way of Von Bertalanffy's principle.

Von Bertalanffy has generalized the second law of thermodynamics which says that in a closed system of two or more levels of energy, in time a mean energy level will be reached. Being a biologist and noting that organisms are not closed energy systems, Von Bertalanffy has shown that in a given system where energy supplies are available, the system comes to rest at a series of equilibria, or steady states, which shift when more energy enters the system. Where there was formerly a final energy state, there are now equifinal states.

In biology, this view has unified a number of laws concerning the maximum surface area for an organism in different climates (Allen's Law), the maximum size of ecological populations, the maximum size for species of cell growth before mitosis occurs, etc. This dynamic principle seems to bridge inorganic and organic systems. Zipf's principle of least effort may be some form of Von Bertalanffy's generalized second law of thermodynamics. Indeed the mathematics of present communication theory is in energy distribution terms (*viz.* cybernetics, negentropy). Also, Freeman's energetics in psychology may come to be looked upon as a special deduction from this generalized second law of thermodynamics.

LITERATURE CITED

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